

Remarks

Reconsideration of this Application is respectfully requested.

Claims 1-24 are pending in the application, with claims 1, 8, 13, and 20 being the independent claims. No new matter has been added.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1-24 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,901,049 to Chapman ("Chapman") in view of U.S. Patent No. 6,032,197 to Birdwell *et al.* ("Birdwell"), and in further view of U.S. Patent No. 6,300,887 to Le ("Le"). For the reasons set forth below, Applicants respectfully traverse.

Claim 1 is directed to a method for optimizing the transmission of TCP/IP traffic between a cable modem and a cable modem termination system (CMTS) in a DOCSIS network. The method includes the steps of:

- (a) determining whether the CMTS supports a dynamic delta encoding header suppression protocol; and
- (b) responsive to a determination that the CMTS does support the dynamic delta encoding header suppression protocol, performing operations including
 - (i) transmitting fields in a first protocol header of a first TCP protocol packet from the cable modem,
 - (ii) suppressing a redundant field in a second protocol header of a subsequent TCP protocol packet, and
 - (iii) transmitting a delta-encoded value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded value

represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet.

Chapman does not teach or suggest each of the foregoing features of claim 1. For example, Chapman does not teach or suggest “determining whether the CMTS supports a dynamic delta encoding header suppression protocol,” as recited in claim 1. Chapman teaches the use of a single header suppression technique: suppression of Ethernet, UDP and IP headers in a flow of RTP packets corresponding to a Voice over Internet Protocol (VoIP) phone call. *See* Chapman, col. 4, ll. 35-50. Specifically, Chapman describes the use of “DOCSIS Header Suppression,” which suppresses fields that remain constant within a header. *See* Chapman, col. 6, ll. 19-24. As such, Chapman does not teach “determining whether the CMTS supports a **dynamic delta encoding header suppression protocol**,” since Chapman only suppresses packets using the **single** form of DOCSIS Header Suppression.

Birdwell does not provide this missing teaching. Birdwell may disclose techniques for implementing packet header compression. *See* Birdwell, col. 2, ll. 4-9. However, Birdwell is silent as to how such techniques could be implemented in a DOCSIS network¹ and, as such, also does not teach or suggest “determining whether the CMTS supports a dynamic delta encoding header suppression protocol,” as recited in claim 1.

In similar regards, Le does not provide this missing teaching. Le may disclose the use of delta encoding as a compression technique. *See* Le, col. 22, ll.29-34.

¹ The MPEP instructs that preambles that limit structure must be given patentable weight. (*See* MPEP 2111.02(I)). The preamble feature of a CMTS implemented “in a DOCSIS network” defines a CMTS that has structure limited to **at least** function within a DOCSIS network. Thus, the preamble of claim 1 must be given patentable weight.

However, Li is also silent as to how such a technique could be implemented in a DOCSIS network, and, as such, also does not teach or suggest “determining whether the CMTS supports a dynamic delta encoding header suppression protocol,” as recited in claim 1.

In summary, Applicants assert that the Examiner inappropriately combines Chapman with the teachings of Birdwell and Le. Persons skilled in the art would not be motivated to combine the teachings of Chapman with Birdwell and Le, since conventional DOCSIS technology as represented by Chapman does **not** provide a mechanism for using alternative header suppression techniques, such as dynamic delta encoding, because the use of such techniques would raise undesired interoperability issues. As set forth in the background section of the present specification:

Heretofore, the use of proprietary data transfer protocols that extend beyond those provided by the DOCSIS specification have been avoided. This is due, in part, to the fact that the DOCSIS specification does not provide a mechanism for using alternative protocols in a cable modem system. For example, the DOCSIS specification does not provide a mechanism for the use of data packet formats other than those it provides. Moreover, because conventional CMTS and cable modem devices have been designed in accordance with the DOCSIS specification, the use of extended protocols has been avoided to ensure interoperability between individual cable modem system components. For example, conventional DOCSIS-compliant CMTS equipment is incapable of differentiating between standard DOCSIS traffic and traffic transmitted in accordance with an extended protocol.

See Specification at paragraph [0017]. Absent such a teaching that provides the ability to incorporate proprietary data transfer protocols, such as dynamic delta encoding, within a DOCSIS network, Applicants assert that the Examiner cannot properly reject independent claim 1.

For at least the reasons set forth above, Applicants assert that independent claim 1 is patentable over Chapman, Birdwell and Le alone or in any rational combination. Claims 2-7 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as claim 1, from which they depend, and further in view of their own respective features. Applicants respectfully request that the rejection of claims 1-7 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 8 is directed to a method for receiving packets by a cable modem termination system (CMTS) from a cable modem in a DOCSIS network that comprises the step of "receiving a message from the cable modem indicating support for a dynamic delta encoding header suppression protocol." As noted above in regard to claim 1, the combination of Chapman, Birdwell and Le does not teach or suggest this feature. Therefore, independent claim 8 is patentable over the combination of Chapman, Birdwell and Le. Dependent claims 9-12 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as independent claim 8, from which they depend, and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 8-12 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 13 is directed to a computer program product comprising a computer useable medium including control logic for optimizing the transmission of TCP/IP traffic between a cable modem and a cable modem termination system (CMTS) in a DOCSIS network. The control logic comprises "first means for enabling a processor to determine whether the CMTS supports a dynamic delta encoding header suppression protocol." As noted above in regard to claim 1, the combination of Chapman, Birdwell

and Le does not teach or suggest this feature. Therefore, independent claim 13 is patentable over the combination of Chapman, Birdwell and Le. Dependent claims 14-19 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as independent claim 13, from which they depend, and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 13-19 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 20 is directed to a computer program product comprising a computer useable medium including control logic for enabling packets to be received by a cable modem termination system (CMTS) from a cable modem in a DOCSIS network. The control logic comprises "first means for enabling a processor to receive a message from the cable modem indicating support for a dynamic delta encoding header suppression protocol." As noted above in regard to claim 1, the combination of Chapman, Birdwell and Le does not teach or suggest this feature. Therefore, independent claim 20 is patentable over the combination of Chapman, Birdwell and Le. Dependent claims 21-24 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as independent claim 21, from which they depend, and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 20-24 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Other Matters

The Office Action has not indicated whether the drawings have been accepted. Applicants assume, absent an indication to the contrary, that the drawings are accepted.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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